



DEPARTMENT OF THE AIR FORCE
USAF CLINIC, HICKAM (PACAF)
HICKAM AIR FORCE BASE, HAWAII 96853

FILE

19

REPLY TO
ATTN OF: SGPE

7 December 1981

SUBJECT: Results of Asbestos Bulk and Air Samples from Bldg 3400
Hawaii Air National Guard (HANG)

TO: 154th COMPG/SN 17/12/11

1. At your request, additional asbestos sampling was conducted in Hangar 3400 on 10 November 1981. Hangar 3400 has been identified by us as having crysotile asbestos insulation material on most of the elevated beams throughout the inner structure. Previous breathing air samples collected by us in June 1981 detected no airborne asbestos present during the sampling period. At this time we recommended you watch the material closely for signs of deterioration or alteration that might generate airborne asbestos. We also agreed to accomplish air sampling in the hangar every six months as required by Air Force Occupational Safety and Health (AFOSH) Standard 161-4, Exposure to Asbestos.
2. During the past month, personnel working in the hangar noticed small pieces of insulation were falling to the hangar floor, probably the result of bird activity. Three separate samples of this debris were collected by us and sent to the Air Force Occupational and Environmental Health Laboratory (OEHL) at Brooks AFB for analysis. Additionally, a breathing air sample was taken and also sent to the OEHL. Results of the bulk samples showed the presence of 0 to 4 percent crysotile asbestos in the debris and the air sample showed less than the practicable detectable limit of 0.01 fibers/cc present in the worker's breathing zone.
3. These results were expected since the amount of debris falling is very small compared to the large hangar area and the large dilution factor caused by the tradewinds blowing through the open hangar. Based on the above results and the guidelines given in AFOSH 161-4, no additional actions are required by you other than a continued observance of the condition of the insulation material. We will continue to sample in the hangar at least every six months and more often upon request to insure breathing air samples remain below the Time Weighted Average (TWA) concentration of 2 fibers/cc of air and the ceiling concentration of 10 fibers/cc of air.
4. If deterioration of the asbestos increases, serious consideration should be given to removing the material or to encapsulating it to prevent fiber release. I don't feel natural deterioration will ever cause fiber levels

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USAF01-00284

ATCH 6

in this hangar to exceed the Permissible Exposure Limits (PELs) where this action would be mandatory, however you may want to consider these alternatives to alleviate worker concern and eliminate the problem completely.

5. If you have any additional questions, please call me at 449-2541.

Marlin L. Sweigart

MARLIN L. SWEIGART, Major, USAF, BSC
OIC, Bioenvironmental Engineering Services

GEORGE R. ARIYOSHI
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD, HONOLULU, HAWAII 96816

A. U. ISHIMOTO
MAJOR GENERAL
ADJUTANT GENERAL

~~VALENTINE A. GIEPERMANN~~
~~MAJOR GENERAL~~
~~ADJUTANT GENERAL~~

DANIEL K. C. AU
COLONEL
DEPUTY ADJUTANT GENERAL

HIENG

2 DEC 1982

SUBJECT: Encapsulation/Removal of Insulation for Aircraft Hangar, Bldg 3400,
Hawaii Air National Guard, Hickam AFB, Hawaii

ANGSC/SG/DE
Stop 18
Andrews AFB, MD 20331

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1. References (Inclosed):

a. Message, SA, USAF OEHL Brooks AFB, 012125Z Oct 1980, subject: Results of Analysis for Asbestos.

B. AF Form 1135, 154 COMPG/DE, 6 October 1981, Bldg 3400, Aircraft Hangar.

c. Letter, USAF Clinic (PACAF)/SGPE, 18 June 1981, subject: Results of Asbestos Bulk and Air Samples from Building 3400, Hawaii Air National Guard.

d. Letter, USAF Clinic (PACAF)/SGPE, 7 December 1981, subject: Results of Asbestos Bulk and Air Samples for Bldg 3400, Hawaii Air National Guard (HANG).

e. Message, SA, USAF DEHL Brooks AFB, 022030Z Dec 81, subject: Results of Analysis for Asbestos.

f. HANG Form 36, HQ 154 COMPG/CC, 9 December 1981, Report of Emergency/Mishap/Unusual Occurrence w/letter, USAF Clinic (PACAF)/SGPE, 8 January 1982, subject: Memo-Occupational Safety and Health Administration (OSHA) Sampling Results for Asbestos in Building 3400, Hawaii Air National Guard (HANG), w/letter, SGPE, 14 December 1981, subject: Memo - Visit by a Federal Occupational Safety and Health Administrative (OSHA) Compliance Inspector to the 154 COMPG, Hawaii Air National Guard (HANG) in Response to an Asbestos Complaint.

g. Memo for Record, 18 December 1981, subject: Building 3400 (Hangar) Asbestos Complaint.

h. Letter, Dept of Labor (OSHA), 28 January 1982, subject: Airborne Asbestos Sampling.

i. Letter, HQ 154 COMPG/MA, 3 February 1982, subject: Results of Asbestos Sampling in Hangar (Bldg 3400).

USAF01-00487

HIENG

SUBJECT: Encapsulation/Removal of Insulation for Aircraft Hangar, Bldg 3400,
Hawaii Air National Guard, Hickam AFB, Hawaii

j. Letter, USAF Clinic (PACAF)/SGPB, 18 June 1982, subject: Air Monitoring
in Bldg 3400 for Airborne Asbestos Fibers.

2. Building 3400, interior hangar roof and structural girders were sprayed with
a fire-retardant composed of a concrete asbestos compound in 1972-73. Since 1978,
pieces of insulation have been falling resulting in a possible asbestos exposure
problem to personnel working in the hangar. Careful study of the deterioration
revealed three areas of concern all of which are being watch closely:

- a. Air Flow.
- b. Birds nesting in structural frame.
- c. Leaking hangar roof (Maintain Roof project completed in FY 81).

3. The problem is being tracked by the Hickam AFB Bio-Environmental Engineer
and the 154 COMPG/SEE. Their results are inclosed. No hazard exists at this time;
however, the potential is high and future accelerated deterioration is a certainty.

4. Present action consists of tracking of insulation "fallout" by the hangar deck
chiefs and the group safety officer. The BEE will not assign a risk assessment code
(RAC) to the hangar because of the air sampling results. However, a plan for
future corrective action must be implemented; now, to prevent undue delay when
action is taken.

5. This problem has been discussed with numerous individuals who are involved in
asbestos removal/encapsulation, including Mr. Arpin of Arpin Products, the inventor
of "Asbestite" (the only patented process, to date). The following considerations
were discussed:

a. Asbestos removal could create a greater asbestos hazard due to the
difficulty in removing all material -- a definite airborne asbestos problem.

b. Asbestos removal would destroy the fire rating of the structure.

c. Asbestos removal would create a tremendous corrosion control problem
since the structure is located 100 yards from the ocean with prevailing winds off
the water.

d. It would take approximately four weeks to encapsulate the 25,500 SF
hangar using a product such as "Asbestite 3000."

e. Encapsulation would not add appreciable weight to the structure.

f. Fire rating the structure and corrosion control would not be a problem
with encapsulation.

g. Encapsulation with "asbestite" (a potassium silicate compound) would
bind the asbestos fibers (magnesium silicate) and possibly render them harmless
over if the material were to fall from the hangar roof.

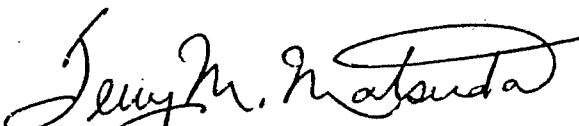
2 DEC 1982

HIENG

SUBJECT: Encapsulation/Removal of Insulation for Aircraft Hangar, Bldg 3400,
Hawaii Air National Guard, Hickam AFB, Hawaii

6. Any suggestions for a solution to this problem will be greatly appreciated. Per our discussion, we have inclosed a chronological history of reports and letters. Please review them and provide us your recommendations. For any clarification of the above, please contact 1LT Alvin Satogata, Base Civil Engineer at 737-6733; or MAJ Kenneth P. Wicks, 154 COMPG/SE, 449-9674/2862.

FOR THE ADJUTANT GENERAL:



JERRY M. MATSUDA
Captain, HANG
Contr & Engr Officer

10 Inclosures
as

CF:

ANGSC/DEM (Mr. Gary Fennell) w/inclosures

HIANG/CC w/o inclosures

154 COMPG/CC w/o inclosures

154 COMPG/SE/DE w/o inclosures

154 USAF Clinic w/o inclosures

✓ 15 ABW USAF Clinic/SGPE w/o inclosures

15 ABW/DEF w/o inclosures

HQ PACAF/DEF w/o inclosures

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DEPARTMENT OF THE AIR FORCE
AIR NATIONAL GUARD SUPPORT CENTER (ANG)
ANDREWS AIR FORCE BASE, DC 20331

REPLY TO
ATTN OF: ANGSC/SG

20 Jan 83

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SUBJECT: Asbestos, Bldg 3400, Hawaii ANG

TO: ANGSC/DE

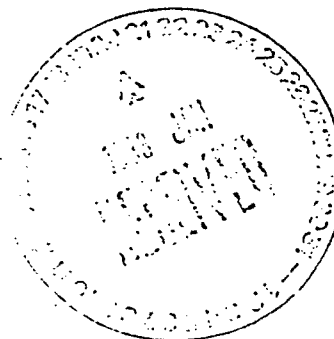
1. We have reviewed the attached correspondence from the Hawaii ANG. It is apparant that there is no immediate health hazard due to asbestos in Bldg 3400. However, our opinion is that the hazard risk can only increase; therefore planning for reducing or eleminating the problem should begin now.
2. Since the concrete asbestos application is only about ten years old, deterioration to the extent we saw at the White Plains unit (105th TASG) may not be excessive. At White Plains encapsulation was not a feasible option due to extensive deterioration, and complete removal was necessary. An extremely expensive project.
3. We recommend a study be made to determine if encapsulation is an option at this point. If it is, a project for the near future (FY 84-85) should be initiated. If it is not, we would recommend continued monitoring by the Hickam Bioenvironmental Engineer until the airborne asbestos level reaches one-half the permissible exposure limit as defined in the most current AFOSH Standard 161-4 paragraph C.1.A; at this point a project for complete removal should be initiated.

FOR THE DEPUTY COMMANDER

Thomas S. Webb
THOMAS S. WEBB, LTC, USAF, BSC
Chief, Bioenvironmental Engineering

1 Atch
Correspondance from Hawaii ANG

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USAF01-00283

ATCH 5

HIENG

File
HANG
742 -34002mP
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MEMORANDUM FOR RECORD

4 September 86

SUBJECT: Hangar Asbestos, HANG Project 86-004; Remove/Encapsulate Hangar Insulation, Bldg 3400, 154 COMPG

1. On 4 September 86, a special meeting was held to discuss the subject project. In attendance were:

<u>Name</u>	<u>Unit</u>	<u>Phone (808)</u>
a. LTC Ken Wicks	154 COMPG/SE	449-9674
b. MAJ Roberto Martinez-Perez	15 ABW USAF Clinic/SGPB	449-2541
c. CPT Alvin Satogata	HIENG/BCE	735-3522
d. 1LT Richard Matta	15 ABW USAF Clinic/SGPB	449-2541

2. The purpose of the meeting was to discuss the subject project and the treatment of the asbestos. LTC Wicks mentioned the background of the facilities. The HANG area on Hickam AFB has a low water pressure and, as such, Hangar was constructed with a fire retardant insulation and a deluge foam system. We have had numerous air samplings of the Hangar area both with open and closed doors. No detectable airborne concentration of asbestos results were measured.

3. The firm of Casalina & Associates took bulk samples which confirmed the presence of Chrysotile asbestos in the spray-on material. Material is in a friable condition and any mechanical agitation would release the fibers into the air. Due to climatic conditions in Hawaii, the Hangar doors are normally in the open position. The combination of tradewinds, birds nesting in the structural beams, and spot roof leaks have resulted in patches of the substance falling to the floor periodically.

4. Major Martinez-Perez mentioned that EPA is really hot and heavy on asbestos problems and is emphasizing the total elimination of use of asbestos as insulating material. He mentioned that the air sampling should not be used as a gauge for treatment. The material is potentially hazardous in its present state and action must be taken to eliminate the hazard.

5. Our alternatives are:

a. Removal of insulation and replacement of the fire retardant (immediately).

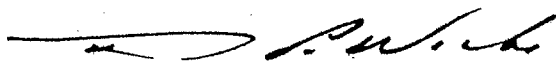
b. Encapsulation (immediately), to follow with programming of removal of insulation and replacement of the fire retardant. This could be included as part of the Long Range MCP project, "Additional Hangar".

USAF01-00453

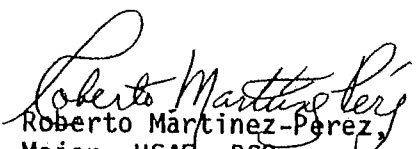
MEMORANDUM FOR RECORD

SUBJECT: Hangar Asbestos, HANG Project 86-004; Remove/Encapsulate Hangar Insulation, Bldg 3400, 154 COMPG

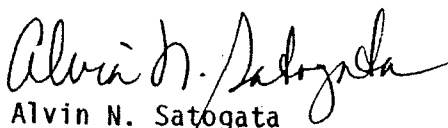
6. The major concern is the HANG, F-15 conversion which begins - FY 87 (2nd quarter). Any closure of the Hangar during this period would impact our conversion. We need to act now.



Kenneth P. Wicks
Lt Colonel, HANG
154 COMPG/SE



Roberto Martinez-Perez,
Major, USAF, BSC
Chief, Bioenvironmental
Engineering Services



Alvin N. Satogata
Captain, HANG
Base Civil Engineer

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HIENG

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MEMORANDUM FOR RECORD

4 September 86

**SUBJECT: Hangar Asbestos, HANG Project 86-004; Remove/Encapsulate Hangar
Insulation, Bldg 3400, 154 COMPG**

1. On 4 September 86, a special meeting was held to discuss the subject project. In attendance were:

<u>Name</u>	<u>Unit</u>	<u>Phone (808)</u>
a. LTC Ken Wicks	154 COMPG/SE	449-9674
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4. Major Martinez-Perez mentioned that EPA is really hot and heavy on asbestos problems and is emphasizing the total elimination of use of asbestos as insulating material. He mentioned that the air sampling should not be used as a gauge for treatment. The material is potentially hazardous in its present state and action must be taken to eliminate the hazard.

5. Our alternatives are:

a. Removal of insulation and replacement of the fire retardant (immediately).

b. Encapsulation (immediately), to follow with programming of removal of insulation and replacement of the fire retardant. This could be included as part of the Long Range MCP project, "Additional Hangar".

USAF01-00280


ATCH 4


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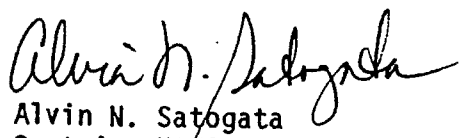
MEMORANDUM FOR RECORD

SUBJECT: Hangar Asbestos, HANG Project 86-004; Remove/Encapsulate Hangar
Insulation, Bldg 3400, 154 COMPG

6. The major concern is the HANG, F-15 conversion which begins - FY 87 (2nd quarter). Any closure of the Hangar during this period would impact our conversion. We need to act now.


Kenneth P. Wicks
Lt Colonel, HANG
154 COMPG/SE


Roberto Martinez-Perez,
Major, USAF, BSC
Chief, Bioenvironmental
Engineering Services


Alvin N. Satogata
Captain, HANG
Base Civil Engineer

USAF01-00281



DEPARTMENT OF THE AIR FORCE

USAF CLINIC, HICKAM (PACAF)
HICKAM AIR FORCE BASE, HAWAII 96853 - 5300

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EPY TO
TTN OF:

SGPB (449-6814)

22 Oct 87

SUBJECT:

86-004 Encapsulate Hangar Insulation, Bldg 3400

TO:

HIENG/BCE

1. Subject specifications were reviewed by our office, and the following comments are provided:

a. Even though chemical encapsulation is considered a viable mean to prevent asbestos fibers from becoming airborne, asbestos experts caution that a pilot test of the encapsulant and the material be done before embarking in expensive extended projects. The reason they express concern is the great potential for material delamination with the added weight of the encapsulant. In Bldg 3400, we should be really concerned due to the present condition of the existing material which is known to be delaminating through age and weather action. Our office still believes that the present encapsulation project will only provide a temporary fix. Since the asbestos material will probably have to be removed at a later date, the cost will probably quadruple.

b. Para 3.09, clean up and testing - There is no mention of final clearance samples and maximum permissible levels to declare the area cleaned. Also, you need to establish how many environmental samples are to be taken and in which locations. Who is going to do the clearance samples?

c. The use of negative pressure air machines to ensure that asbestos fibers are contained within the work area is not addressed in the specifications.

2. If there are any questions, please call our office.

Roberto Martinez Perez
ROBERTO MARTINEZ-PEREZ

LTC, USAF, BSC
Chief, Bioenvironmental Engrg Svcs

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USAF01-00279

ATCH 3

ANGSC/DEM REVIEW COMMENTS

State: HI Base: Hickam AFB

Date: 21 Jan 88

Project: PN 86004 Remove/Encapsulate Hangar Insulation, Bldg. 3400 \$ 500.K

___ Statement of Work	___ Civil	___ Mechanical	Engineer:
___ Concept	___ Structural	___ Electrical	M. Brousseau
<u>XX</u> Preliminary	___ Architectural	<u>XX</u> General	ANGSC/DEM
___ Prefinal			Andrews AFB, MD
			To:
			154 TFG/DE
			USP&FO HI

Drawing/Paragraph Item Comment

Project Phasing 1 Authorization to proceed with the next design phase (pre-final) is withheld and pending the receipt and analysis of the following information:

LTC Roberto Martinez-Perez has raised the underlying concern of this entire project by his comment in his letter of 22 Oct 87. Request the A-E review his comments and respond directly to the BCE and USP&FO with a copy to this office. It is further recommended that the A-E obtain the written guarantee of the factory representative on the life and effectiveness of his product on this hangar. The manufacturer may also provide some certification to those applying this product and guarantee its effectiveness for 10 or 15 years. Report the findings and determinations to ANGSC/DEP & DEM immediately. The main concern is that ANG will needlessly spend \$ 500.0 K for this project and the encapsulation method will fail without the government having a legitimate legal recourse. The A-E provided an example of its effectiveness at West Point. However, we need to know what guarantee will be provided to the government under the contract.

Drawings

2 The plans do not identify or explain in a note the location of the asbestos material. The drawings identify where there is no asbestos material. A-E shall revise the drawings to better explain and show the surfaces that contain asbestos material. A suggested method is to list all the various structural components and non-structural walls and metal curtains and the approximate area in each phases.

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Note B, page 1 is not acceptable because it could preclude out-of-state bidders by making it a requirement for a contractor to visit the site. While it is advantageous for any contractor to visit the site, a contractor must be able to reasonably and sufficiently bid this job from his analysis of the plans and specifications. Delete or reword the note.

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02 FEB 1988

ANGSC/DEM

RPM Project Technical Review, Hickam AFB, (Instl Code KNMD)

TAG Hawaii

1. The project documents for the following projects have been reviewed:

PN	TITLE	CWE
86004	Remove/Encapsulate Hangar Insulation, Bldg 3400	\$465,707
86008	Alter Storage Room, Radio Relay Fac Kahului (KABD)	\$134,000

2. The submittal for PN 86004 is not approved and the preliminary design submittal must be resubmitted subject to incorporation of review comments being forwarded directly to the Base Civil Engineer and the US Property and Fiscal Officer.

3. For PN 86008, you are authorized to proceed to the prefinal design stage subject to incorporation of review comments being forwarded directly to the Base Civil Engineer and the US Property and Fiscal Officer.

FOR THE CHIEF, NATIONAL GUARD BUREAU

Signed

ROBERT P. RHOADS, Chief
Operations & Maintenance Branch

cc: USPFO HI w/Rev Cmts
154 COMPG/DE w/Rev Cmts ✓

10 Mar 88

Memo:

Let Blazich and myself attended this meeting. The impression it gave us was that they were going to go ahead with encapsulation recommendation no matter what we would say. We recommended removal and replacement of the material. But we told them that they would have to make decision on how they wanted to spend the money. I told them that the contractor would not guarantee the material for any significant amount of time and that pilot testing would be necessary if encapsulation was chosen. However, we thought that removal of the material was the way to go now or later. D. J. O'Neil

USAF01-00333



DEPARTMENT OF THE AIR FORCE

USAF CLINIC, HICKAM (PACAF)
HICKAM AIR FORCE BASE, HAWAII 96853 - 5300

REPLY TO
ATTN OF

15 Med Grp/SGPB (SrA Smith, 449-2283)

10 Mar 88

SUBJECT:

Asbestos Evaluation

TO:

HIENG/BCE 1

1. As requested, the following information is provided regarding the evaluation of asbestos-containing material in the air handler room in Bldg 3382. An asbestos survey was also performed in the air conditioning duct systems on the second and third floor hallways and in the air handler room 31A in Bldg 3400. These areas were evaluated by SrA Smith of Bioenvironmental Engineering Services, Hickam AFB HI.

2. The air conditioning system in air handler room in Bldg 3382 is insulated with material containing 5-30% amosite asbestos, which warrants the current identification sign on entrance of the room (see attachment). EPA current guidelines require that an operations maintenance program be established whenever an area is found to contain friable asbestos material. This will include the routine inspection and repair of deteriorating insulation. Our visit ensured that all insulation is in good condition and will not present any hazard provided the material is not disturbed.

3. Representative samples were collected from the air conditioning duct systems located in the hallways in front of rooms 21A and 31A and in room 31A in Bldg 3400. Results obtained from the Pearl Harbor Industrial Hygiene Lab indicated 25% chrysotile asbestos was present. The asbestos presents no health hazard in room 31A and the connected hallway duct system. However, the air conditioning duct located in the hallway adjacent to room 21A is in poor condition and friable asbestos is visible.

4. The air conditioning duct insulation must be repaired in the hallway of 21A. Any projected renovation must be accomplished IAW USEPA National Emission Standards (40 CFR 61 and OSHA Regulations 1910.1001 and 1926.58).

5. If you have any questions, please call.

John Spinks
for ROBERTO MARTINEZ-PEREZ, Lt Col, USAF, BSC
Chief, Bioenvironmental Engineering Services

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USAF01-00329

15 Med Grp/SGPB (449-6814)

11 Jul 88

86004, Asbestos Encapsulation, 154 COMPG, Hickam AFB HI

HIENG/BCE

1. Review of this project has produced the following comments:

a. In our letter of 22 Oct 87, we asked for a guarantee on the encapsulating work. The contractors responded with a guarantee of only two years. From an economical point of view, the cost of encapsulation does not seem to be justified, since there are several physical factors at the hangar which are causing the present asbestos to deteriorate:

(1) Constant tradewinds blowing through the hangar at 10 to 20 knots (gusting up to 30 knots), causing the material to flex.

(2) Salt air from the ocean reacting with the encapsulant and breaking down the material.

(3) Building vibrations caused by engine run-ups, and stressing the material.

With these physical agents at work, the encapsulant may not last much past two years, and abatement of the material would have to occur. The encapsulation should have a broader guarantee; e.g., 10 to 20 years, in order to preclude asbestos abatement.

b. Section 2.b. The coating thickness of only 1/16 inches should be scrutinized when a pilot section of beams and roof are coated, since considerable weight will be generated by the encapsulant and around large beams. The coating on top of the beams may not hold together to support the entire load, since gravity will cause most of the material to flow to the underbelly.

c. Figure 2, pg 02081-21, does not include available showers as described in 29 CFR 1910.1001 and 29 CFR 1928.56. Showers are never mentioned within the entire specifications, and are required.

d. Paragraph 1.11A, 2. This paragraph should include definitions found in 40 CFR 61, subpart M, which describes asbestos emissions.

e. Air monitoring should be accomplished by the contractor on the outside of the work area to ensure fiber release does not occur through bad seals or unseen rips in the elastic sheets.

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USAF01-00322

f. Paragraph 3.08.E. The analytical company should be participating in an EPA testing program which tests the proficiency of the technician analyzing the asbestos.

g. We will not be able to support paragraphs 3.08F and 3.09F since we are providing full support to 15 ABW Asbestos Removal Team, and cannot jeopardize their health and safety by using our equipment on this project.

3. If there are any questions, please call.

Brian A. Blazicko

BRIAN A. BLAZICKO, 1Lt, USAF, BSC
Deputy Chief, Bioenvironmental Engineering Services

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USAF01-00323

JOHN WAIHEE
GOVERNOR

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LEXIS T. LUM
ADJUTANT GENERAL
MYLES M. NAKATSU
COLONEL
DEPUTY ADJUTANT GENERAL

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD, HONOLULU, HAWAII 96816-4495

REPLY TO
ATTN OF: HIENG/BCE

10 April 1990

SUBJECT: Asbestos Hazard Assessment for the Hawaii Air National Guard, Bldg 3400,
Hickam AFB

TO: 15 MED GP/SGPB

1. The Hawaii Air National Guard (HIANG) is currently redesigning its asbestos abatement project within the hangar portion of Bldg 3400. The fire retardant material applied to the walls and ceiling of the hangar is composed of asbestos containing material (ACM). The hangar is normally open, with flow-through ventilation, and is closed during inclement weather. Air sampling has to date recorded acceptable airborne fiber levels.

3. Request an asbestos hazard assessment be conducted to determine the necessity of this asbestos abatement project. The abatement measure under consideration by HIANG is removal of the ACM within the hangar. The assessment is required to justify the cost of the work. Request the assessment be completed NLT 15 May 1990.

4. Your expeditious consideration is greatly appreciated. POC at the HIANG Engineering Office (HIENG) is Mr. Jonathan Ito, our Environmental Coordinator, at 732-2253.

FOR THE ADJUTANT GENERAL:

Alvin N. Satogata
ALVIN N. SATOGATA, Capt, HIANG
Base Civil Engineer
1st Ind, SGPB (449-2541)

ASBESTOS
RELATED MATERIAL DO NOT
DISCARD MAINTAIN
INDEFINITELY
IAW HQ USAF POLICY

APR 30 1990

TO: HIENG/BCE

In its current state I do not consider the subject ACM to be "friable." Also, as you indicate in your letter, past air sampling has not indicated any hazardous levels of asbestos fibers in the building air. Therefore, I do not feel removal is necessary. I recommend the material be indefinitely managed in place.

Stephen N. Payne
STEPHEN N. PAYNE, Maj, USAF, BSC
Chief, Bioenvironmental Engineering Services

cc: HQ PACAF/SGPB
15 CES/DEEN



NATIONAL GUARD

Americans At Their Best.

USAF01-00276

ATC H 1

HN WAIHEE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD, HONOLULU, HAWAII 96816-4485

ASBESTOS RELATED MATERIAL
DO NOT DISCARD, MAINTAIN
INDEFINITELY, IAW HQ USAF POLICY

MYLES M. NAKATSU
COLONEL
DEPUTY ADJUTANT GENERAL

PLY TO
TN OF: HIENG/BCE

27 July 1990

SUBJECT: Asbestos Hazard Assessment for the Hawaii Air National Guard, Bldg 3400,
Hickam AFB

TO: 15 MED GP/SGPB

1. References:

a. HIANG Letter, and your Response, dated 10 April and 30 April 1990 respectively, same subject. (Atch)

b. HIANG MFR, dated 27 Sept 1988, Subject: 86004 - Encapsulate Hanger Insulation. (Atch)

c. 15 ABW/SGPB Letter, dated 22 Oct 1987, Subject: 86-004 Encapsulate Hanger Insulation, Bldg 3400. (Atch)

d. HIANG MFR, dated 4 September 1986, Subject: Hanger Asbestos, HANG Project 86-004; Remove/Encapsulate Hanger Insulation, Bldg 3400, 154 COMPG. (Atch)

e. ANGSC/SG Letter, dated 20 Jan 1983, Subject: Asbestos, Bldg 3400, Hawaii ANG. (Atch)

f. 15 ABW/SGPE Letter, dated 7 December 1981, Subject: Results of Asbestos Bulk and Air Samples from BLDG 3400, Hawaii Air National Guard (HANG). (Atch)

2. Before the HIANG cancels our asbestos abatement project (PN KNMD 86004 Remove/Encapsulate Hanger Insulation, Bldg 3400) altogether, we would like to insure that your office is aware of the history of this project. In the past, abatement was recommended by your office because it was believed that the deterioration of the fire retardant would increase with time and eventually pose a problem. Removal was preferred due to questions regarding the reliability of an encapsulant. Then, as now, there was no immediate health hazard from airborne asbestos.

3. Request your reevaluation of the hazard in terms of long term release potential, as expressed in Atch 5. It is our disposition that if there is a significant probability that the health hazard will increase in the future, we should conduct the removal process now to preempt any safety threats and cost escalations. Request response NLT 17 August 1990.



NATIONAL GUARD

Americans At Their Best.

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4. Your expeditious consideration is greatly appreciated. POC at the HIANG Engineering Office (HIENG) is Mr. Jonathan Ito, our Environmental Coordinator, at 732-2253.

FOR THE ADJUTANT GENERAL:


ALVIN N. SATOGATA, Capt, HIANG
Base Civil Engineer

6 Atch

1. Letter, 10 Apr 90
2. MRF 27 Sept 88
3. Letter, 22 Oct 87
4. MFR 4 Sept 86
5. Letter, 20 Jan 83
6. Letter, 7 Dec 81

USAF01-00275

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Memorandum for Record

HIENG/CE II

ASBESTOS RELATED MATERIAL
 DO NOT DISCARD, MAINTAIN
 INDEFINITELY, IAW HQ USAF POLICY

Subject: Asbestos Hazard Assessment, Building 3400 Hanger
 Hickam AFB, Hawaii

1. Reference HIANG Letter, subject: Asbestos Hazard Assessment for the Hawaii Air National Guard, Bldg 3400, Hickam AFB, dated 27 July 1990. (Atch)

2. Meeting took place on 8 August 1990 at 1030 in the office of Major Payne, 15 ABW/SGPB. Attending was Major Payne and Mr. Jonathan S. Ito, HIANG/Environmental Engineer.

3. Discussed were the following:

a. Clarification of 15 ABW/SGPB response to the HIANG initial request for Hazard Assessment, dated 10 April 1990. Major Payne was asked to clarify his recommendation to manage in place the asbestos in Bldg 3400 in light of the recommendations that had come out of the 15 ABW/SGPB office in the past. Major Payne responded that because the material does not pose a significant hazard at present, or in the foreseeable future, health concerns can not be used as justification for the encapsulation or complete removal of the hanger asbestos insulation. He has consulted with others knowledgeable ^{persons} about asbestos and they have given the same recommendations. The only reasons he can see as justification of the complete encapsulation or removal of the hanger insulation are first, peace of mind, where we would remove the asbestos in order to eliminate the possibility of any problems in the future, or second, if we had funds specifically for this type of work that required expenditure.

b. Condition of Asbestos in Hanger. The method of abatement used all depends on how old the insulation is and if it is still in good condition. He feels that it is in good condition. It is not friable, in that although you could break it up by hand the insulation itself is rather hard. Major Payne said that in his opinion, the material will continue to be in good condition for the next five years. If we're concerned about some old water damaged areas, he recommends encapsulation of those small damaged areas associated with leaks that occurred prior to the hanger roof repair.

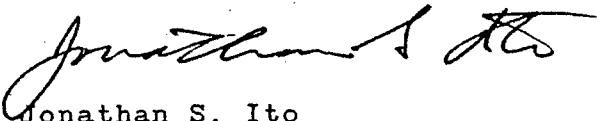
c. Frequency of Air Sampling. There is currently no set frequency for air sampling. Due to the new AF Regulation 91-42, CE is now in charge of the entire Air Force Asbestos Program. BEE is involved in a consultation role, on friable asbestos. We would go through CE for bulk sampling. CE should schedule inspections of all suspected ACM. If an area is discovered that CE becomes concerned about, CE can request air monitoring from BEE. Justification for the request must be given. If no hazard is found, then the frequency of monitoring will be reduced. Major Payne said that at the most, our areas could be sampled every 6 months, but he doesn't think they require monitoring more frequently than annually.

USAF01-00272

d. 15 ABW/SGPB Assessment of Health Hazard and Recommendations. Complete removal would disturb the asbestos, and there would always be residual asbestos in the crevices since we're dealing with a surface that is not smooth. 15 ABW/SGPB recommends management in place. This would involve scheduled inspections, spot encapsulation when required, and spot removal when appropriate. After spot removal of bad areas, the edges would be encapsulated. Should the material begin to deteriorate rapidly in the future, then we could consider more drastic measures, but given his knowledge of the history of the material and its present condition, these are his recommendations.

3. Meeting adjourned at 1100.

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INDEFINITELY, IAW HQ USAF POLICY


Jonathan S. Ito
HIENG/CE II

AFD: asbesmemo (c)

USAF01-00273

* BULK ASBESTOS SAMPLE No. HIC91-028 *

To: NAVENPVNTMEDU SIX
Consolidated Industrial Hygiene Laboratory
BRMEDCLINIC, NAVSHIPYD, Pearl Harbor
Box 112, Bldg 1750
Pearl Harbor, HI 96860-5080

X Routine--Mail results to: 15 ABW/DEENE
Attn: Capt Greg Perry
Hickam AFB, HI 96853-5000
Rush Analysis--Call results in to:
Capt Greg Perry
Duty Ph: 449-7516
(Follow up by mailing hard copy)

Type of Material (X or fill appropriate blanks)

<input type="checkbox"/> Pipe Insulation	<input type="checkbox"/> Ceiling Tiles (Suspended)
<input type="checkbox"/> Boiler Insulation	<input type="checkbox"/> Acoustical Tiles
<input type="checkbox"/> Blown Insulation	X <input checked="" type="checkbox"/> Ceiling Surfacing Material
<input type="checkbox"/> Duct Insulation	<input type="checkbox"/> Roofing Material
<input type="checkbox"/> Transite Panel	<input type="checkbox"/> Floor Tile (Color: _____)
<input type="checkbox"/> Other: _____	<input type="checkbox"/> 9x9, <input type="checkbox"/> 12x12, <input type="checkbox"/> Other: _____

Additional Information (Optional):

1. Material Condition: Flaking off and falling to the floor
2. Location Comments: Exposed beams and underside of corrugated metal roof
3. Attach a drawing, or sketch the approximate sample location on the reverse.

-----ANALYSIS FOR SAMPLE No. HIC91-028-----

Bldg No. <u>3400</u>	: -----FOR LAB USE ONLY-----
Room No. <u>Hanger Bay</u>	: Lab No. <u>03883</u> Results (X or fill appropriate blank):
Floor No. _____	: <input type="checkbox"/> Asbestos Free (less than 1%)
Sample taken by: <u>GP</u>	: <u>15</u> % Chrysotile Asbestos
Initial	: _____ % Amosite Asbestos
Date sampled: <u>28 May 91</u>	: _____ % Other _____ Asbestos

30 MAY 1991

Requested by:

Analysis by:

Gregory A Perry
GREGORY A. PERRY, Capt, USAF
Asbestos Program Manager

R M Ishikawa
Roy M. Ishikawa, Ph.D., CIH
Head Chemist

LAR 91-778

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

12 Aug 97

MEMORANDUM FOR 154 WG/CC

FROM: 15 AMDS/SGPB
 1225 Freedom Avenue
 Hickam AFB, HI 96853-5229

SUBJECT: Asbestos Ambient Air Sample Results, Bldg 3400

1. During Jun 97 Bioenvironmental Engineering Flight (BE) personnel conducted ambient air sampling in the hangar bay area of Bldg 3400. In Jul 97 a bulk sample of dust and debris was collected from the rafters in Bldg 3400. The samples were sent to Armstrong Laboratories, Brooks AFB to be analyzed for asbestos.

2. Findings:

a. 16 Jun 97 Ambient Air Results:

Sample ID #	Area	Sample Time (Minutes)	8 Hour Time Weighted Average Fibers per Cubic Centimeter (f/cc)	Standard (f/cc)
SX970470	South End of Hanger	480	0.0001	0.1
SX970471	North End of Hanger	480	0.0001	0.1

b. Per 29 CFR 1910.1001, Asbestos, employers shall ensure that no employee is occupationally exposed to an airborne concentration of asbestos in excess of 0.1 f/cc of air during an 8-hour work day. In addition, public exposures should not exceed 10% of the occupational exposure limit or 0.01 f/cc

c. 11 Jul 97 Dust and Debris Bulk Sample: 30 - 50% Chrysotile Asbestos.

d. The following is a list of historical asbestos ambient air sample results:

Sample Date	Date Reported to Hawaii ANG	8 Hour Time Weighted Average in f/cc
Unknown	18 June 1981	<0.01
Unknown	18 June 1982	<0.002
Feb 83	9 May 1983	0.0
Aug 83	12 December 1983	<0.001
May 84	25 May 1984	<0.003
Nov 86	19 January 1988	<0.015
May 87	19 January 1988	<0.0047 - 0.044

USAF01-00222

Nov 87	19 January 1988	<0.006 - 0.0018
May 92	4 June 1992	<0.0015
Nov 92	1 December 1992	0.00069
Jun 93	23 June 1993	<0.002
Nov 93	10 December 1993	0.00085
May 94	6 June 1994	<0.0018
Nov 94	8 December 1994	<0.002
May 95	N/A	<0.0019
Nov 95	N/A	0.0006
May 96	N/A	<0.0018
Jun 97	12 August 1997	<0.0001

3. Conclusions/Recommendations:

a. Although the dust collected from the rafters indicates that the plaster is releasing chrysotile asbestos fibers air sample results show that the airborne concentrations are very low.

b. Sample results were compared to the Occupational Exposure Limit - Time Weighted Average (OEL-TWA) for asbestos as specified in AFOSH Std 48-8, Controlling Exposures to Hazardous Materials. The standard OEL-TWA represents the time-weighted average concentration for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, throughout their careers without adverse health effects. Air sample results dating back to 1981 consistently show that the airborne concentration of asbestos fibers is less than 10% of than the OEL or 0.01 f/cc.

c. Air sampling is not adequate for determining the integrity of the plaster. A visual inspection by the building custodian or the 15th Civil Engineering Squadron will provide a more adequate determination of the plaster integrity. We will no longer conduct routine ambient asbestos air sampling.

4. If you have any questions please contact Capt McCormack-Brown at 449-6814.

STEPHANIE MCCORMACK-BROWN, Capt, USAF, BSC
Deputy Commander, Bioenvironmental Engineering Flight

cc

154 WG/EMO (Capt Wong)
154 WG/SE (SMSgt Redoble)
15 CES/CEV (MSgt Rosser)

USAF01-00223

Wiederholt Cynthia E MSgt 15 ADS/SGGB

From: Wiederholt Cynthia E MSgt 15 ADS/SGGB
Sent: Thursday, June 28, 2001 8:17 AM
To: Murata Jody Ann C. GS-07 15 CES/CEVC
Cc: Frazey John S Capt 15 ADS/SGGB; Winslow Benjamin M SSgt 15ADS/SGGB
Subject: RE: ACM in B.3400

The results from the ceiling material is 15% chrysotile, sorry for the delay I just wanted to make sure it was the ACM in question! Our recommendation would still be to either have it abated or manage it in place with encapsulation. Thanks

-----Original Message-----

From: Murata Jody Ann C. GS-07 15 CES/CEVC
Sent: Tuesday, June 26, 2001 1:03 PM
To: Wiederholt Cynthia E MSgt 15 ADS/SGGB
Subject: RE: ACM in B.3400

MSgt Wiederholt,

I would have to do some research to see what type of encapsulation records CE has. I'll let you know what I find. In spite of what was recommended ten years ago, I think the current situation warrants some type of abatement.

Thanks for your help.

Jody

-----Original Message-----

From: Wiederholt Cynthia E MSgt 15 ADS/SGGB
Sent: Tuesday, June 26, 2001 12:16 PM
To: Murata Jody Ann C. GS-07 15 CES/CEVC
Subject: RE: ACM in B.3400

I have a copy of that report & all the air sampling. That was ten years ago, and the condition of the ACM/ceiling material could have been in a lot different condition then, & of course as you know standards also change. Do you have documentation of a hazard assessment accomplished by CE with recommendations, not just 10 years ago, but for any historical records? Is there a way to research structural records from any CE shop that would have a record of encapsulation? Thanks

-----Original Message-----

From: Murata Jody Ann C. GS-07 15 CES/CEVC
Sent: Tuesday, June 26, 2001 9:24 AM
To: Wiederholt Cynthia E MSgt 15 ADS/SGGB
Subject: RE: ACM in B.3400

MSgt Wiederholt,

Thanks for collecting a bulk sample for asbestos testing in B.3400. The HIANG will be drafting a 332 to request that the ACM be removed.

I don't have any records indicating that this material was removed or encapsulated. I have a letter dated 10 April 1990 from the HIANG Base Civil Engineer requesting an asbestos hazard assessment be conducted to determine the necessity of an asbestos abatement project within the hangar. The assessment was that the asbestos was not considered to be friable, and since "past air sampling has not indicated any hazardous levels of asbestos fibers in the buiding air," the abatement project was not deemed necessary. The Chief of Bioenvironmental Engineering recommended that "the material be indefinitely managed in place."

I will be looking for the asbestos sampling results you took on Friday.

Thanks,
Jody

-----Original Message-----

From: Wiederholt Cynthia E MSgt 15 ADS/SGGB
Sent: Monday, June 25, 2001 7:01 AM
To: Murata Jody Ann C. GS-07 15 CES/CEVC; Sullivan David M GS-12 15 CES/CEVC
Cc: Frazey John S Capt 15 ADS/SGGB; Winslow Benjamin M SSgt 15ADS/SGGB
Subject: RE: ACM in B.3400

As we discussed last Friday, there are only two options to correct this problem: Abate it or manage it in place. First of all, I want to make sure the material we're talking about is indeed asbestos containing material, or not another coating material/previously used encapsulant. We collected a sample Friday and will send it to the lab today.

BEE has records from 1984 to 1991 on this issue, we conducted general area & personal air monitoring to determine if there were airborne fibers. While we did not detect any airborne fibers and stated the hangar work area was not a health hazard, it's still not a good industrial hygiene practice to live with ACM dropping from the ceiling, back in 1984 or now. The situation has the potential to be a health hazard, and as I suggested on Friday a health hazard does not need to exist to take action to either manage it or remove it.

I have a letter dated back to 1988 that states encapsulation was scheduled to be completed, do you have any records indicating this was actually accomplished? I have a few questions regarding this subject issue, if encapsulation was accomplished, then an assumption may be made the ceiling material has not been continuously falling from the rafters for the last 16 years, but the encapsulate may be starting to fail now. Do you know of any other hangars that have a similar problem?

Refer to your asbestos inspector manual & AHERA standard: If the laboratory results come back it is ACM, the friable ceiling surfacing material would be classified as significantly damaged: At least one tenth of the surface is evenly distributed and showing adhesive failure. The ACM has a high potential for contact and moderate potential for disturbance. This would make this project a priority to either abate it or re-encapsulate it. Jody's interim controls should take care of the immediate situation at hand. I understand they also have to clean out the chips from the drains, gloves, wet method, and containing in waste bags is also appropriate for this task.

I will forward you a copy of the ceiling material ACM results.

-----Original Message-----

From: Murata Jody Ann C. GS-07 15 CES/CEVC
Sent: Friday, June 22, 2001 10:14 AM
To: Wiederholt Cynthia E MSgt 15 ADS/SGGB
Subject: RE: ACM in B.3400

Not to my knowledge.

-----Original Message-----

From: Wiederholt Cynthia E MSgt 15 ADS/SGGB
Sent: Friday, June 22, 2001 10:05 AM
To: Murata Jody Ann C. GS-07 15 CES/CEVC
Subject: RE: ACM in B.3400

Has a work order been submitted to get the ceiling abated?

-----Original Message-----

From: Murata Jody Ann C. GS-07 15 CES/CEVC
Sent: Friday, June 22, 2001 9:33 AM
To: Wiederholt Cynthia E MSgt 15 ADS/SGGB; Sullivan David M GS-12 15 CES/CEVC
Subject: ACM in B.3400

Dave and MSgt Wiederholt,

The 154th AGS Aircraft Maintenance Unit supervisor, SMSgt Tachihata, is concerned with asbestos in B.3400. 15 CES/CEVC has sample results dated 28 May 91 from ceiling surfacing material from B.3400 Hangar Bay. It was reported to be 15% chrysotile. The material is flaking off and falling to the floor from exposed beams and the underside of the corrugated metal roof.

I visited B.3400 this morning, and it looks like the situation is the same as it was back in 1991. There was ceiling material on the floor, and the personnel sweep it up every morning and put

it in the wash. The material also collects in nearby drains, which are cleared out using a leaf blower. The wind blows through the hangar, which may facilitate the material flaking off the ceiling.

I spoke with SMSgt Awana, who is the acting supervisor while SMSgt Tachihata is on leave. He is concerned about personnel being exposed to airborne asbestos fibers. I advised him to wet the material that falls from the ceiling and to place them in asbestos waste bags. However, this does not remedy the real problem of what to do with the asbestos on the ceiling, which will continue to flake and fall to the ground. He would like our Flight and Bioenvironmental Engineering to line our ducks in a row before he goes to his Wing Safety office with a recommendation. He would like to see the ACM removed altogether to protect the personnel.

Please provide me comments concerning worker safety issues and remediation.

Thanks,
Jody

Bldg 3400 -



DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

10 July 2001

MEMORANDUM FOR 15 CES/CEVC

FROM: 15 ADS/SGGB

SUBJECT: Building 3400 Asbestos Containing Material

1. **Background.** The fire retardant surfacing material located on the ceiling and high walls of building 3400 are asbestos containing materials (ACM). Bioenvironmental Engineering (BE) conducted ambient and personal air monitoring from 1981 to 1997 to determine personnel potential exposures, all monitoring results were below the occupational exposure limits. Personnel within this facility, Hawaii Air National Guard, have continuously requested the ACM be abated. Although historical records indicate the ACM was previously in good condition and not deteriorating, the ACM is now flaking to the hangar floor and the adhesive is failing.

2. **Survey.**

a. On 22 June 2001 personnel from BE surveyed the hangar conditions. Personnel escorted BE through the hangar to display flaking chips of material throughout the hangar and accumulated in drains. BE collected a sample of the chips from the hangar floor to determine if the material was indeed the ACM from the ceiling and high walls. Sample results confirmed the chips are ACM.

b. The ACM is rapidly deteriorating and is significantly damaged, extent of material damaged is greater than one-tenth evenly distributed throughout hangar. The ACM is friable.

c. The hangar area where ACM is falling to the floor, is a high traffic area with various aircraft operations and personnel.

3. **Recommendations.**

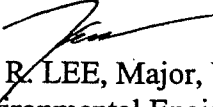
a. Ms. Jody Murata from 15 CES/CEVC recommended personnel spray water onto the ACM chips prior to sweeping, then chips are disposed of in ACM labeled waste bags. BE will conduct personal air sampling while personnel are performing this interim control, to determine potential ACM exposures. BE will report results and additional recommendations when air sample results are received.

USAF01-00207

b. Due to the ACM deteriorating condition, BE recommends the fire retardant ACM be managed in place with encapsulation or abated. Repair and abatement priority management guidelines are provided in AFI 32-1052, *Facility Asbestos Management*.

c. ACM encapsulation or abatement must be accomplished by certified asbestos workers in accordance with all federal, state, and local regulations.

4. **Questions.** If you have any questions regarding this report, please contact MSgt Cynthia Wiederholt, 449-6814.



KURT R. LEE, Major, USAF, BSC
Bioenvironmental Engineering Flight Commander

cc:

15 ADS/CC

15 ABW/SEG

154 MXS/LGM

USAF01-00208

CONCEPT DESIGN

MULTI-DISCIPLINE AE SERVICES
 DELIVERY ORDER NO. 0001
 PLANNING STUDY FOR FIRE SUPPRESSION
 AND ROOF REPAIRS, BUILDING 3400
 HICKAM AFB, HAWAII

PAGE 1 OF 6
 FEBRUARY 7, 2002
 CONTRACT: DAHA50-01-D-0001
 NAGAMINE OKAWA ENGINEERS INC.

A. DESIGN CRITERIA:

ANGI 32-1023	Criteria and Standards for Air National Guard Construction, 2 Oct 1998
ANGETL 92-2	ANG Engineering Technical Letter, Managing Asbestos-Containing Material (ACM) in Air National Guard (ANG) Facilities, Jan. 24, 1992
MIL-HDBK-1008C	Fire Protection for Facilities Engineering, Design, and Construction, 10 June 1997
ETL 98-7	Engineering Technical Letter, Fire Protection Engineering Criteria – New Aircraft Facilities
SOW letter	ANG, Clarification of Scope of Work for PN KNMD 980052 Fire Suppression and Roof Repairs, Bldg 3400, Hickam AFB, HI, 30 Aug 2001
UBC	Uniform Building Code, International Conference of Building Officials, 1997 edition
UFAS	Uniform Federal Accessibility Standard, dated 1 April 1988
ADAAG	American with Disabilities Act Accessibility Guidelines, dated 26 July 1991
National Fire Codes	National Fire Protection Association Standards including:
NFPA 11	Low Expansion Foams, 1998
NFPA 11A	Medium and High Expansion Foam Systems, 1999
NFPA 13	Sprinkler Systems, 1999
NFPA 16	Foam-Water Sprinkler and Foam-Water Spray Systems, 1999
NFPA 20	Stationary Pumps, 1999
NFPA 24	Private Fire Service Mains, 1995
NFPA 409	Aircraft Hangars, 2001

B. GENERAL:

Building 3400 is currently being used by the Hawaii Air National Guard as an aircraft maintenance hangar with offices and support facilities for the hangar. The footprint of the building is approximately 51,441 square feet in area. The hangar occupies approximately 24,757 square feet of the building. Project KNMD 980052 will provide concept proposals that will address the repair of the roof and support structure within the hangar area, including asbestos abatement, replacement of the hangar doors and the fire suppression system, and replacement of lights. The concept proposal will include general construction requirements and cost estimates for three options based on a memo from the Hawaii Air National Guard dated 30 August 2001.

C. CONTRACT PROPOSAL OPTIONS:

The memo from the Hawaii Air National Guard dated 30 August 2001 outlines the following options for the concept proposal:

CONCEPT DESIGN
DELIVERY ORDER NO. 0001
PLANNING STUDY FOR FIRE SUPPRESSION
AND ROOF REPAIRS, BUILDING 3400
HICKAM AFB, HAWAII

Page 2 of 9
FEBRUARY 7, 2002
CONST CONTRACT DAHA50-01-D-0001
NAGAMINE OKAWA ENGINEERS INC.

Option A

Repair by replacement of entire roof, support structure and fire suppression to include new motorized hangar doors. Replacement of roof and structure need only meet clearance requirements for F-15 and F-22 fighter aircraft. Bulk disposal of structural members with abatement limited to glove bag work at cut points required for disassembly. Investigate cost of disposal if local landfills incapable of accepting debris. Include new hangar lights.

Option B

Provide the complete abatement of asbestos insulation and installation of new fire retardant material on structural members, repair of existing roof structure and replacement of roofing system. Install new High Expansion Foam fire suppression system with repair of doors to include installation of new storage tanks to provide required water volume as necessary.

Option C

Install a new false ceiling to separate work area from asbestos coated support structures. Install new lighting incorporated into ceiling. Overlay existing roof system with new standing seam system with appurtenances. Repair doors. Incorporate into the ceiling a deluge sprinkler system including installation of new storage tanks to provide required water volume/duration OR incorporate into the ceiling a new high expansion foam system including installation of new storage tanks to provide required water volume as necessary.

D. EXISTING CONDITIONS:

Building Codes:

Occupancy: The occupancy classification of the existing aircraft hangar area is Group S, Division 5, for aircraft maintenance use as described in the 1997 UBC. The occupancy of the adjacent two-story spaces consists of a Group F, Division 1 for the first floor shops and Group B occupancy for the second floor offices.

Type of Construction: The building construction type for the aircraft hangar based on the Record Drawings, dated May 1, 1957, is estimated to be a Type II-FR (fire resistive) construction.

Existing hangar structure consists of metal roof and siding on steel purlins and supported by structural steel truss framing. Overall dimensions of the hangar portion of the building are 174 feet x 145'-9". Underside of the roof and structural steel framing are

CONCEPT DESIGN
DELIVERY ORDER NO. 0001
PLANNING STUDY FOR FIRE SUPPRESSION
AND ROOF REPAIRS, BUILDING 3400
HICKAM AFB, HAWAII

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FEBRUARY 7, 2002
CONST CONTRACT DAHA50-01-D-0001
NAGAMINE OKAWA ENGINEERS INC.

covered with fireproofing material that contains asbestos. Steel framing rests on pile foundation.

Existing hangar doors use an angle guide top track system with cable trolley door return mechanism. Over the hangar doors at mid-bay, an 8 feet x 12 feet door panel was provided for aircraft tail clearance. The existing steel hangar guide tracks on the floor are intended to remain and be reused. The overall hangar door width will remain the same.

There are two existing hangar doors, each consisting of six (6) bi-parting door panels in an overall width of 158'-0".

The existing hangar fire protection consists of fire hydrants installed along the building perimeter, a high expansion foam system installed at the roof level, heat detectors and UV/IR detection. Maintenance was performed on the fire systems within the building during 28-30 August 2001. Various components of the high expansion foam system failed to operate during the maintenance testing including the foam generator fans on the roof, water supply valves, and UV/IR detectors. The high expansion foam system was originally supplied by a 20,000-gallon wooden water tank, which was recently removed due to leaks in the tank. The hangar also has two deluge systems installed at the roof level, however the control valves to these deluge systems have been shut and the control wiring from the releasing panel to the deluge valves have been removed. The existing fire protection in the hangar does not currently meet any installation standards governed by NFPA or DOD criteria.

According to ETL 98-7, "Fire Protection Engineering Criteria – New Aircraft Facilities," renovation, modification, or alteration of existing aircraft facilities without installed fire suppression system shall comply with the provisions of the ETL. The concept proposals provided will use this ETL as a reference for the design criteria unless indicated otherwise.

E. WATER SUPPLY:

A water flow test was performed on 10 January 2002 to determine the available water supply around Building 3400. The results of the test are:

Flow Hydrant:	FH # 319
Test Hydrant:	FH # 311
Static Pressure:	68 psi
Residual Pressure:	48 psi
Flow at Residual Pressure:	1384 gpm
Flow at 20 psi:	2220 gpm

The water supply will not be able to furnish the total water demand required by the fire suppression system outlined in Option A for the hangar.

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F. DISCUSSION

I. ARCHITECTURAL, STRUCTURAL, ASBESTOS-ABATEMENT AND ELECTRICAL REQUIREMENTS

Option A Repair and Replacement

Remove asbestos cement fireproofing materials within the hangar area.
Demolish metal roof panels.
Demolish metal wall siding panels over hangar doors.
Remove lighting in the hangar area.
Remove structural steel roof framing.
Remove metal wall siding panels at hangar door pocket structure.
Remove hangar door and accessories.
New structural steel roof framing. New framing to take into account new lower hangar doors.
New metal roof panel installation.
New motorized lower hangar doors at two sides of the hangars.
New concrete trench around the perimeter of the hangar area, with steel cover for drainage.
New lighting in the hangar area.
Electrical work in support of fire protection system and new hangar doors.
New metal wall siding installation, above new hangar door, on hangar door pocket structure and facing for hangar door.
New metal roof flashing installation.
New metal draft stop curtain at ceiling of hangar.
Spray applied fireproofing over structural steel framing.
New concrete masonry unit Pump House building, 25 feet x 25 feet x 15 feet high, with concrete roof. Provide modified bitumen roofing system on low slope roof with minimal overhang. Overhead coil service doors and personnel doors for access and louvers for natural ventilation.

The asbestos-containing fireproofing that is located on the steel beams and metal roof panels appears to be friable. For the design options that include the removal of the existing roof and steel framing members, it is our opinion that a complete abatement (inside a negative pressure containment) will be necessary. It will not be feasible to bulk dispose of structural members with abatement limited to glove bag at cut points for disassembly. Because there is a need to contain the friable materials inside the hangar area, demolition and disposal of roof and framing materials cannot proceed unless abatement of friable asbestos materials is completed.

Option B Abatement of Asbestos Cement Materials

Remove asbestos cement fireproofing materials within the hangar area.
Remove damaged metal roof panels.

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Demolish metal wall siding panels over hangar doors.
Remove metal wall siding panels at hangar door pocket structure.
New metal roof panel in the area existing roof panels are damaged.
New metal wall siding installation, above hangar door, on hangar door pocket structure and facing for hangar door.
Remove, repair and re-install existing hangar doors.
New metal draft stop curtain at ceiling of hangar.
New concrete trench around the perimeter of the hangar area, with steel cover for drainage.
New lighting in the hangar area.
Electrical work in support of fire protection system.
New concrete masonry unit Pump House building, 25 feet x 25 feet x 15 feet high, with concrete roof. Provide modified bitumen roofing system on low slope roof with minimal overhang. Overhead coil service doors and personnel doors for access and louvers for natural ventilation.

As stated in Option A, the asbestos-containing fireproofing that is located on the steel framing and roof panels appears to be friable. In order to work on the repair of damaged roof panels, it is our opinion that a complete abatement (inside a negative pressure containment) will be necessary. Because there is a need to contain the friable materials inside the hangar, demolition and disposal of damaged roof panels cannot proceed unless abatement program is completed. Therefore, cost of complete abatement program is included in this option.

Option C Cover Asbestos Cement Materials

Remove asbestos cement fireproofing materials within the hangar area.
Repair metal roof overlay installation.
Demolish metal wall siding panels over hangar doors.
New metal wall siding installation, above hangar door, on hangar door pocket structure and facing for hangar door.
Remove, repair and re-install existing hangar doors.
New metal roof flashing installation.
New metal draft stop curtain at ceiling of hangar.
New densglass sheathing board suspended metal framing at hangar ceiling.
New two layers densglass sheathing board on metal framing over steel columns at hangar.
New concrete trench around the perimeter of the hangar area, with steel cover for drainage.
New lighting in the hangar area.
Electrical work in support of fire protection system.
New concrete masonry unit Pump House building, 25 feet x 25 feet x 15 feet high, with concrete roof. Provide modified bitumen roofing system on low slope roof with minimal overhangs. Overhead coiling service doors and personnel doors for access and louvers for natural ventilation.